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PowerAmerica

PowerAmerica is a 90-member sustainable and driven consortium of industry, universities, and national labs, accelerating the commercialization of energy-efficient SiC and GaN power semiconductor chips and electronics. Our membership spans the WBG technology ecosystem, including the leading U.S. universities that train the workforce. We fabricate semiconductor chips and are a critical enabler of the efficient "electrification of everything" effort, which is vital in achieving decarbonization and energy sustainability. We have managed over US$156 million that we strategically allocated to 210 industrial and University projects and are currently negotiating a US$64M Department of Energy renewal to further catalyse WBG power technologies.

Kisab

Kiselkarbid i Stockholm AB (KISAB), was founded in 2017 with the purpose to develop the fast sublimation growth process-monocrystalline (FSGP-M) process for growth of high-quality silicon carbide substrates.

KISAB strives to be the most innovative provider of silicon carbide substrates with the lowest defect densities for application in power devices with the highest energy efficiency, highest power capability, lowest leakage current, and highest reliability on the marke, as well as developing cost effective processes for mass production of silicon carbide substrates.

Comheat

ComHeat Microwave AB is a design company that develops silicon power devices using foundry services. Presently we are working on a new patented LDMOS concept.

We also have a fundamentally Latch-Free LIGBT/IGBT new patented device concept.

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WBG Power Center

WBG Power Center provides a platform for cooperation between industry, research institutes and academia within the whole value chain from materials to systems. The center has ambition; (a) to explore the potential of WBG electronics for future applications, increased competitiveness, and sustainable development by joining resources, competences, and knowledge, (b) to promote the introduction of WBG power electronics in products and applications where high energy efficiency, compactness and higher operation temperature provide significant system advantages and (c) to inspire and involve others. Founded in 2011 WBG Power Center involves 14 industrial companies, 2 institutes and 4 universities. We cover a wide range of power electronic applications with focus on automotive and rail traction.

ORGANIZERS:

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SCAPE 2024

International Wide-Bandgap Power Electronics Applications Workshop

14–15 May 2024, Stockholm, Sweden

Workshop Programme
14–15 May
Grand Hotel Saltsjöbaden

SCAPE 2024
14–15 May

Tuesday May 14 – Day 1

09:00 - 09:30	Registration
09:30 - 09:40	Welcome Mietek Bakowski, RISE

Strategic Initiatives

09:40 - 10:00	Victor Veliadis, Power America *“PowerAmerica 1st phase accomplishments and the plans for the $64M renewal and similar”*
10:00 - 10:20	Shinsuke Harada, AIST *”Activities and strategy regarding WBG power devices at AIST”*
10:20 - 10:40	Lubing Zhao, CASA *”The Development Status and Opportunities of Wide Bandgap Semiconductor Industry in China”*
10:40 - 11:00	Coffee Break
11:00 - 11:20	Guo Qi Zhang, TU Delft *“PACK4EU – define and execute joint vision and actions of EU backend industry”*

SiC and GaN devices

11:20 - 11:40	Daniel Hofmann, Wolfspeed *“SiC on its way to conquer eMobility”*
11:40 - 12:00	Martin Domeij, On Semiconductor ”Low on-resistance 1200 V SiC MOSFETs”
12:00 - 13:30	Lunch & Exhibition

SiC and GaN devices

13:30 - 13:50	Simone Rascuna’, ST *”ST Silicon Carbide Technologies to Enhance Power System Efficiency”*
13:50 - 14:10	Francis Chai, Coherent *”A rugged and cost-effective SiC MOSFET technology”*
14:10 - 14:30	Dilder Chowdhury, Nexperia *”Power GaN technology for Automotive and high current applications”*
14:30 - 14:50	Christiam Gasparini, Innoscience *”GaN Power devices: reducing size, increasing performance while lowering system cost of power conversion systems”*
14:50 - 15:10	Shubhangi Bhadoria, KTH *”Over-current capability of SiC MOSFETs”*

Modeling and design

15:30 - 15:50	Dimosthenis Peftitsis, NTNU *”Real-time SiC MOSFET device models”*
15:50 - 16:10	Konstantin Kostov, RISE *”Modeling of Power Modules”*
16:10 - 16:30	Saeed Akbari, RISE *”Lifetime modeling of Power Modules”*
16:30 - 16:50	Khizra Abbas, KTH *”Zero-voltage switched SiC MOSFET inverter for EV drives”*
16:50 - 17:00	Break

Material development

17:00 - 17:20	Jimmy Thornberg, STMicroelectronics *“Crystal growth, characterization and defects in 200 mm SiC wafers”*
17:20 - 17:40	Johan Ekman, Kisab *”BPD free 4H-SiC 6” & 8” substrates grown by the FSGP-M process”*

Reliability

17:40 - 18:00	Anant Agarwal, Ohio State Univ. *“Effective Screening methods for SiC power mosfets to achieve <10 ppm failure rates”*
18:00 - 18:20	Josef Lutz, Chemnitz Univ. *“Reliability Testing of SiC Power Semiconductor Devices Respecting Package-Die Interactions”*

WBG PC Annual Awards

18:20 - 18:30	Per Ranstad, WBG Power Center *“Introduction”*
18:30 - 19:00	WBG PC Annual Awards
19:00 - 20:00	Break
20:00	**Dinner**

SCAPE 2024
14–15 May

Wednesday May 15 – Day 2

Applications

09:00 - 09:20	Kooros Moabber, Volvo Car *“Traction Inverter Technology Trend and WBG Devices”*
09:20 - 09:40	Johan Hellsing, Heart *”Adoption of SiC technology in an aeronautical application”*
09:40 - 10:00	Ninos Poli, Scania *”The use of WBG semiconductors in Scania’s products”*
10:00 - 10:20	Kenneth Svensson, KraftpowerCon *”High Power DCDC converter for Fuel Cell applications”*
10:20 - 10:40	Coffee Break

Applications

10:40-11:00	Rafal Kopacz, Warsaw Univ. of Technology *”Advanced 1,5 kV DC charging system based on SiC technology”*
11:00 - 11:20	Young-Jin Kim, Revotech *“PTC system for electric car with SiC Mosfets”*
11:20 - 11:40	Klas-Håkan Eklund, Comheat *”New Silicon based power devices will compete with SiC and GaN devices”*

Market & Roadmap

11:40 - 12:00	Elena Barbarini, Yole Group *“GaN & SiC power device – Technology & Market overview”*
12:00 - 13:20	Lunch & Exhibition

Panel Discussion

13:20 - 14:10	Chair: Elena Barbarini, Yole Group *”Power Module Packaging Technologies & Designs: actual solutions and future trends”* *Panelists: Gottwald Thomas (Schweitzer), Goessler Michael (AT&S), Dieter Liesabeth (ViSiC), Kooros Moabber (Volvo Car), Daniel Hofmann, (Wolfspeed), Victor Vieliadis (PowerAmerica), Idaka Shiori (Mitsubishi)*

Applications

14:10 - 14:30	Idaka Shiori, Mitsubishi *“SiC Solutions for Railways: Efficiency Challenges in High Reliability Applications”*
14:30 - 14:50	Coffee Break

Packaging technologies

14:50 - 15:10	Dieter Liesabeths, ViSiC *“GaN power devices and power modules”*
15:10 - 15:30	Thomas Gottwald, Schweizer *”Embedding of SiC Mosfet into a PCB”*
15:30 - 15:50	Michael Goessler, AT&S *“Under the surface embedding for automotive and industrial applications“*
15:50 - 16:00	Closing remarks Hans-Peter Nee, KTH Royal Institute of Technology
16:00	**End of workshop**